

# MATHEMATICAL PROCESS—COMMUNICATING



## THE ONTARIO CURRICULUM, MATHEMATICS, 2005

Students will communicate mathematical thinking orally, visually and in writing, using mathematical vocabulary and a variety of appropriate representations and observing mathematical conventions.

Students...[use] a variety of appropriate representations including numbers, symbols, pictures, graphs, diagrams, and words. Through communication, students are able to reflect upon and clarify ideas, relationships and mathematical arguments.

## ROLE OF STUDENTS

- Respond to instructions orally, visually and in writing as appropriate, e.g., explain, discuss, describe, justify, compare, suggest, write, tell, read, share, demonstrate, and present.
- Use correct mathematical language and vocabulary in explanations, e.g., interpolate, extrapolate, draw a line of best fit, evaluate, factor, expand, simplify, solve, rearrange, drag a vertex, transform by reflection.
- Respond clearly with sufficient detail so that their thinking can be understood.
- Interpret and summarize information from charts and graphs, providing appropriate detail, e.g., describe patterns and contrasts.
- Use the symbolic language of mathematics correctly.
- Read and reread all of the given information and instructions to ensure understanding, e.g., identify key information needed to solve the problem.
- Communicate mathematical learning by combining various representations, e.g., words with diagrams, charts or graphs with verbal descriptions.

## SAMPLE QUESTIONS

- How can you express (explain, describe) this in a different way?
- What is a definition for...?
- How can you reword this question (answer)?
- What mathematical symbols could you use to communicate this statement?
- What mathematical operations are implied by the wording of this problem?

## SAMPLE FEEDBACK

- How would you show the steps to your solution so someone else can follow your thinking?
- If I follow your equal signs, it looks like  $8 = 1$ . Since we know this is not true, how can we express this differently?
- Use Smart Ideas® to help you connect your ideas and communicate them more clearly.
- Provide a more complete, organized outline of your ideas so that your reasoning can be followed.
- How might you present this argument and data to the Principal?
- Be more specific and give more details.
- Express this in a different way.